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BRITISH MUSEUM
11 DEC 1974
NATURAL HISTORY

THE EDINBURGH NATURAL HISTORY SOCIETY

JOURNAL

1973

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President	Mrs. E. Farquharson
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EDITORIAL

In years to come we will perhaps look back on 1973 as a very eventful year. It will probably be seen to have been the highwater mark of the internal combustion engine. It certainly was the year in which the public in general became conscious of the world shortage of natural resources.

This sudden realisation of our vulnerability to shortages of energy will inevitably be reflected in much greater pressure for new power-stations, petrochemical complexes and new coal mines and in turn an increased threat to our ever diminishing wild-life habitats.

Now, without denying the energy priorities of the situation, nor attempting to obstruct such developments, it will still be important to see that, when they take place, they are controlled and give maximum consideration to the preservation and amenity of our environment.

In this our Society has a role to play.

During the course of 1973 the General Council put forward a code of conduct which is reproduced at the back of the Journal. It is perhaps worth drawing members attention to the fact that this code may be superceded by the 'Plant Protection Bill' which is due to receive a second reading in the House of Lords early in 1974.

1973 was the last year of Mr. MacLeod's term of office as president and it was suitably marked by a successful weekend excursion, which he led, to Glen Lyon and Keltney Burn. We take this opportunity to record our thanks to Mr. MacLeod.

Most members will be aware of the sad loss to the Society with the sudden death of Bill Hall on 16th July 1973. Bill gave considerable time to the Society as Hon. Secretary for many years and he was renowned for his work on badgers. He will be missed by all.

We would like to thank all who contributed to the work of the Journal. In particular S.N.L. Ryder for a very interesting article on bird song and also R.H. Watson for an informative article on arboriculture.

Our thanks are also due to Nora Henderson for carefully recording our winter activities.

Finally we should like to thank Gordon Finnie and his associates for the printing of the Journal.

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Field work being carried out by members of the Society

POND SURVEY The Society is assisting the Lothians Branch of the Scottish Wildlife Trust in locating ponds and breeding sites of amphibians. Helpers are particularly needed for East Lothian (Dunbar area) and in the Lammermuirs.

Organiser - MRS E. Hamilton, Woodridge, Ancrum Road, Dalkeith.

WOODLAND SURVEY Assistance is being given to the Lothians Branch of the Scottish Wildlife Trust to survey deciduous woodlands in the Lothians. As this survey is in its first year, help is required in all areas.

Organiser - J. Ballantyne, 6 Mansfield Place, Edinburgh 3.

UNION CANAL The invertebrate fauna is being sampled throughout the year with the intention of identification to species level of some of the groups and assessing their distribution.

Organiser - I Gauld, 57 Newington Road, Edinburgh 9.

BUMBLE BEES This is a national scheme, organised by the Bee Research Association, which has been in operation since 1970. There are many areas inadequately recorded.

Organiser - Mrs E.M. Smith, 33 Hunter Terrace, Loanhead.

FORTH ISLANDS BREEDING BIRDS SURVEY The survey, which has been in operation since 1959, covers five of the Inner Forth Islands.

Organiser - R.W.J. Smith, 33 Hunter Terrace, Loanhead.

CORSTORPHINE HILL It is proposed to cover the Natural History of this area over several years. A start has been made on the birds, bees and plants, the larger mammals, and tree mapping. Further help is required for all branches.

Organiser - Mrs E. Farquharson, 6 Chamberlain Road, Edinburgh 10.

LOTHIANS BADGER SURVEY This is part of a national scheme organised by the Mammal Society. Mapping of setts in the Lothians is being undertaken. Help is needed in all areas, particularly East Lothian.

Organiser - Mrs E. Farquharson, 6 Chamberlain Road, Edinburgh 10.

WINTER LECTURES 1972/73

A successful series of winter lectures was held on the second Wednesday of each month from October to April within the rooms of the Y.W.C.A. at 7 Randolph Place, Edinburgh, at 7.30 p.m. Following the A.G.M. in October, Mrs. Winifred Robertson, one of our own members, addressed the meeting on "SCOTLAND THROUGH THE YEAR". With the aid of a selection of her own beautiful colour slides, Mrs. Robertson showed the infinite beauty and colouring that could be seen in our native land throughout the different seasons of the year. She covered Scotland from north to south, and from east to west, including the mountains of the north-west under snow and the cold clear light of spring and early summer; a frozen loch Rannoch and the machair of Harris alight with the flowers of June; stormy weather in the Cuillins and the stern cliffs of Durness; the flaming colours of autumn on Deeside and Speyside. The talk was accompanied with a lively and informative commentary on places, people and customs, and altogether Mrs. Robertson provided her audience with a strong stimulus to get out and about around Scotland. The speaker at the November meeting was Mr. Roy Dennis, R.S.P.B. Highland representative and former warden of the Fair Isle Bird Observatory. His subject was "SOME NEW SCOTTISH BIRDS". Mr. Dennis said that bird-life in Scotland was changing all the time, and we were at a particularly interesting period at the moment. New breeding birds were being reported, such as the great northern diver and temmincks stint which nested for the first time in 1971; others were extending their range - a prime example being the collared dove. Several factors contributed to these changes. First, habitat changes had affected birds like the hen-harrier. Persecution had affected the sea-eagle, osprey and kite, including disturbance at nesting-sites by bird-watchers and photographers; toxic chemicals at one time threatened the existence of birds like the peregrine falcon; and climatic changes had brought us birds like the slavonian grebe and the gadwell. The fulmar, which had first nested in Fair Isle in 1903 had now increased to 17000 birds! The gannet, kittiwake and the arctic and great skuas had all increased and were extending their range. In Speyside, because of the change over from sheep farming to forestry, the greenshank was decreasing, but on the other hand the buzzard was on the increase. In the course of his talk, Mr. Dennis showed magnificent slides, which included some of the "newer" nesters in Scotland - the wood-sandpiper, the redwing and the golden-eye, to mention only a few.

"FRESHWATER ECOLOGY" was the subject of the December meeting at which the speaker was Dr. Derek Mills of Edinburgh University. He spoke first of the important role natural history societies could play in the conservation of the natural environment, and urged that parties be organised to carry out regular and detailed surveys of some of the many waters around Edinburgh. He then described in detail, the life-cycle in fresh water - how sunlight provided energy enabling different forms of life therein to live, and how different species of fish inhabited different lochs in the highlands. He spoke at length about Duddingston loch within our own city boundary. Following this talk many questions were asked concerning the state of the river Almond, and also the North and South Esk rivers which are so polluted.

The first meeting in 1973 was titled "THE CONSERVATION OF SCOTLAND'S FORESTS" - the speaker being Mr. Brian Holtham of the Forestry Commission at Roslin. Mr. Holtham first spoke of the types of trees which were planted in the Commission's forests. In these forests and on most private estates, conifers were planted, which are capable of thriving on poor soil and of yielding in a comparatively short time substantial quantities of those timbers - softwoods - that are in greatest demand for everyday use. The native Scots pine is high on the list. But on the peaty slopes of the western hills, with their high rainfall, the spruces have proved more satisfactory. Other conifers which figure largely are the three larches - European, Japanese and Hybrid, the Corsican pine and Douglas Fir. Where soil and climate are suitable, hardwoods, principally oak and beech, are planted although the area involved is small. Foresters have always recognised that the woodlands in their care provide invaluable habitats for animal and plant life of interest and pleasure not only to the naturalist but also to the wider public which visits the forests for relaxation in peaceful surroundings. The forests of Britain, whether in private or in public ownership, have a very important part to play in safeguarding wildlife, and the speaker showed fine photographs of many of the birds, animals, and flowers to be found in our forests today.

"SCOTTISH MOUNTAINS AND THEIR WILD FLOWERS" was the title of the talk given at the February meeting by Mr. J.R. Aitken. With the aid of fine colour slides he took the audience to various parts of the highlands and islands and showed some of the plants, rare and common, which could be found there at different times of the year. Starting with Perthshire, he showed the Grass of Parnassus, cranberry, and scented orchid, which he had found up Glen Bruar; eyebright on the low hills above Dunkeld; tooth wart in the woods of Glen Lyon; and the early purple saxifrage blooming at Easter 2000 ft up Ptarmigan. With a passing look at Loch Duich side, we were taken across to Skye and then on to Harris and into the hills there, and too, to the wonderful stretches of sandy bays on the west side of the island. After this botanical tour of the highlands and islands, we were shown some slides depicting the autumn colouring in the north-west and a series of unique slides taken in North Uist of an eagle's eyrie. At the March Meeting, Dr. Neil Bayfield of the Nature Conservancy, Banchory, spoke on "HUMAN IMPACT IN THE CAIRNGORMS". In the past, the grazing of red deer and the burning of heather had mostly affected the lower ground, but recently recreational pursuits had been affecting the higher parts too. An increase of leisure and mobility had been bringing pressure on the countryside, abetted by hotel and big business interests providing facilities such as the Aviemore centre. Well meant, but perhaps wrong provisions could also be made by such bodies as the Countryside Commission. For example, a carpark had been provided by the County Council at the base of Stac Polly which had had the effect of concentrating hill-climbers on the one approach - a footpath had been formed and had deteriorated. To relieve this pressure a route had been constructed round the back of the mountain. At Ben Eighe, where a carpark, an information centre, a picnic area and two nature trails had been provided, a survey was carried out of people using the facilities. Very few wandered from the trail itself; 95% of them were "educated" people. Dr. Bayfield then discussed at some length the problems in the Cairngorms, illustrating his remarks with some colour slides of the places mentioned.

WINTER LECTURES

October to December 1973

Following the A.G.M. on Wednesday, 11th October 1973, one of our own members, Mr. W.A. Hughes of the Edinburgh School of Agriculture, addressed the meeting on PLANT DISEASES. The study of plant diseases was quite modern, though the diseases themselves went back to Biblical times and beyond. The modern study was based on the work of Pasteur. In general most plant diseases were caused by fungi; most animal diseases by bacteria, and virus diseases affected both kingdoms. With the aid of slides the most common diseases of the potato were described (Scotland had led the world in this study); the tomato, wheat, soft fruits, garden flowers and bulbs were all shown and the possible treatment discussed

The speaker at the November meeting was Mr. Timothy Parish of the Nature Conservance, Banchory and his subject was A HIGHLAND ESTATE - ITS WILDLIFE AND MANAGEMENT. Mr. Parish began by defining management as anything man does to change the natural environment with a view to the future. In agriculture there was a long-established practice of management, but not in other fields. The result was the clearing of the Caledonian Forest; the destruction of soil structure and its nutrients and of the habitats of wild animals by uncontrolled burning; the killing by shooting of carefully selected animals; the flooding of reservoirs. In fact, the present Highland scene was largely man-induced and the appearance of many areas, especially in the north-west, was that of barren wastes. Many wild animals such as the beaver, the wolf, the elk, the wild pig and the wild horse had entirely disappeared, and others such as the pine-marten, the wild cat and the badger were threatened. The areas of mixed woodland which present the best habitat were dwindling fast, and not being replaced.

It was the task of the Nature Conservancy to try to re-establish the mixed habitat favourable to animals and at the same time, by careful planning, to try to make it profitable and acceptable locally and to preserve human amenity. In particular, in the Highlands, the Nature Conservancy had undertaken a study of red deer and red grouse, and in Glen Feshie, under agreement with the land-owner, it had attempted first to discover the present condition of the red deer population and then to carry out research related to its management. Much research had been done on the deer themselves, including "tagging" of calves. This talk was illustrated with a fine selection of slides depicting the terrain in and around Glen Fechie, and of the deer themselves.

On Tursday, 11th December a joint meeting with the Scottish Wildlife Trust was held within the rooms of the Royal Arch Chambers in Queen Street, Edinburgh, the speaker being Mr. R.J. Wheater, Director of the Zoological Society of Scotland. His subject was ZOOS AND THEIR CONTRIBUTION TO CONSERVATION. Mr. Wheater mentioned the practice from earlier times of keeping animals in captivity, either for entertainment or for their usefulness, leading, in modern times, to the formation of zoos. These were either commercial in outlook or were formed by Societies for furthering the science of zoology. Since the last war the number of zoos throughout the country had increased greatly, and at the same time the outlook has been changing too. Educational programmes are now undertaken by many zoos. In the field of conservation a zoo prefers to measure its success by its ability to provide suitable conditions leading to successful breeding, in particular with species becoming rare in the world. Mr. Wheater illustrated his talk with a selection of excellent slides.

The following evening, the Edinburgh Natural History Society had a SOCIAL EVENING, at which several members took part. A team consisting of three ladies and three gentlemen answered questions on general natural history, put to them by Mr. C.P. Rawcliffe who acted as Master of Ceremonies. This was much enjoyed by team and audience alike. Following a break for refreshments provided most lavishly by the ladies of the catering committee, the President, Mrs Elizabeth Farquharson, spoke of a visit she had made to Nepal and with the aid of beautiful colour slides took her audience to many interesting places in that little-known land.

The Blackbird Dawn and Dusk Chorus in an Edinburgh Suburb

Stephen Ryder

Introduction

The blackbird Turdus merula is one of the first birds to wake in the morning (Fitter, 1969) preening and stretching before flying to a perch on which it joins in the dawn chorus about six minutes after waking (Armstrong, 1963). Song indicates the ownership of territory (Fisher, 1940) and the function of the dawn chorus is to redefine the territory at the beginning of each day (Fitter, 1969).

In spring and early summer the male sings continuously for about 30 minutes (Snow, 1958). In late summer, autumn and winter the chorus takes the form of 10-15 minutes continuous "chinking" as distinct from the alarm "chack" of both the male and female.

Armstrong (1963) found that the time of the first vocalation stayed near civil twilight throughout the year, being a little before from March to June, and a little after from September to November. The sun rises about 30 minutes after civil twilight at the equinoxes, and one hour after at the solstices.

The dawn peak in the daily song cycle is balanced by a dusk peak of longer duration. At dusk the blackbird does not always sing the latest; the song thrush Turdus philomelos sometimes sings later. In late summer, autumn, and early winter both sexes "chink" for about 20 minutes before flying to roost (for territorial defence) before roosting (Thorpe, 1961). In late winter the "chinking" is accompanied by a little song from the males, and by spring, dusk song consists mainly of continuous song from the males.

The average song season extends from February until July, but its start is affected by the weather, and the season continues longer in towns (McAlister, 1945). Dawn song ends first, in June, and the cessation of dusk song in mid July may be hastened by drought or delayed by rain (Snow, 1958).

The weather can hasten or delay the daily start of the chorus by about 10 minutes. Warm, wet and still conditions are more favourable than cold, dry and windy weather, humidity apparently being an important factor (Thorpe, 1961).

Material and methods

The observations were made in south Edinburgh (55°54'N) on a suburban housing estate with gardens of approximately quarter of an acre, having only small trees and bushes.

The times of the dawn chorus and dusk chorus were recorded as often as possible from the beginning of 1970 to the end of 1971. The total number of observations at dawn was 159, and at dusk 242. In addition to recording times, observations were made on the extent of the 1971 song season, and weather was noted on 60 occasions at dawn and 140 occasions at dusk during 1971.

The time of the dawn chorus or dusk chorus was plotted on a graph together with the times of civil twilight and sunrise or sunset. The times used were the first or last vocalation to the nearest five minutes, and where no records were available extrapolations were made between regions with records. The times used for sunrise and civil twilight (when the sun is 6° below the horizon) were those for 56° N. Times are British Standard Time throughout ie. one hour ahead of Greenwich Mean Time.

Results

According to Hillstead (1944) the male sings from only one song post during the breeding season. In the present study, however, the males in two territories each sang from as many as four perches, although preference was given to one or two.

Dawn chorus

The blackbird nearly always began singing before other birds in the area, beginning from one to twenty minutes before the song thrush, and from five to thirty minutes before the robin Erithacus rubecula, although on four days in November 1970 and five days in Autumn 1971 a robin began to sing from five to thirtyfive minutes before a blackbird.

The times at which a blackbird began to sing are shown in Table 1 and Fig. 1. The average time before sunrise at which a blackbird was heard to sing in February and March was about forty-five minutes, which is approximately the time of civil twilight. The findings are shown in Table 2 in comparision with those of other observers.

TABLE 1

TIME OF BLACKBIRD FIRST VOCALATION

1970 and 1971

	1970	1971		1970	1971		1970	1971
Jan 1	08.55	08.55	Mar 29		05.50	Oct 18		07.15
Jan 2	08.55		Mar 31	05.45	05.30	Oct 19		07.15
Jan 3		08.55	Apr 3	05.40		Oct 20	07.10	07.10
Jan 10	08.50	08.50	Apr 10		05.00	Oct 21	07.15	07.15
Jan 11	08.45	08.50	Apr 11	05.30	05.00	Oct 22	07.10	
Jan 12		07.55	Apr 12	05.25		Oct 23	07.15	
Jan 13		07.50	Apr 15	05.20		Oct 25		07.20
Jan 14		08.00	Apr 17	05.10		Oct 26	07.20	
Jan 15		07.30	Apr 20	05.05	04.50	Oct 27	07.25	07.20
Jan 16		08.25	Apr 23		04.45	Oct 28	07.25	
Jan 23		08.00	Apr 27	04.40		Oct 29	07.30	
Jan 24	08.30		Apr 28		04.35	Oct 31	07.35	
Jan 25	08.15		Apr 29	04.20		Nov 2	07.30	
Jan 26		08.00	Apr 30		04.30	Nov 3		07.35
Jan 27	08.05	08.30	May 2		04.25	Nov 4	07.30	
Jan 29		07.55	May 4	04.20		Nov 5		07.45
Jan 30		08.15	May 5		04.15	Nov 7	07.40	
Feb 4		08.20	May 10		04.00	Nov 8		07.55
Feb 5		07.55	May 14	04.00		Nov 9		07.45
Feb 6		08.00	May 18	04.00		Nov 10	07.50	07.50
Feb 8		07.30	May 26		03.40	Nov 11		07.30
Feb 9		07.30	May 28		03.35	Nov 12		07.50
Feb 10		07.50	Jun 1		03.25	Nov 13	07.55	08.00
Feb 11	08.00	07.55	Jun 4	03.30		Nov 14	08.00	
Feb 12	08.00		Jun 8	03.30		Nov 16	08.00	
Feb 13	08.00		Jun 11	03.25		Nov 17		07.50
Feb 14	08.00		Jun 16	03.20		Nov 18	08.00	08.00
Feb 15		08.00	Jun 27		03.25	Nov 19	08.00	
Feb 16	07.55	07.45	Jun 28		03.25	Nov 20	08.00	
Feb 17		07.55	Jun 29		03.25	Nov 21	08.05	
Feb 18		07.30	Jun 30		03.25	Nov 22	08.10	08.15
Feb 22		07.10	Jly 5		03.30	Nov 29		08.20
Feb 23		07.15	Jly 6		03.30	Dec 1		08.20
Feb 24		07.15	Jly 9		04.00	Dec 3		08.25
Feb 25		06.50				Dec 4	08.30	
Feb 26		06.30				Dec 6	08.40	
Feb 27		06.30	Sept27		06.40	Dec 7	08.30	
Mar 2		07.10	Oct 1	06.35		Dec 8		08.25
Mar 3		06.55	Oct 3	06.40		Dec 10		08.25
Mar 4		07.05	Oct 4	06	06.45	Dec 12	08.40	
Mar 5		07.05	Oct 7	06.50		Dec 16	08.30	
Mar 6		07.10	Oct 11		07.00	Dec 18		08.40
Mar 8		06.45	Oct 12	07.00	07.00	Dec 19	08.45	
Mar 11		06.30	Oct 13	07.00	07.00	Dec 20	08.40	
Mar 12		06.45	Oct 14	07.10	07.05	Dec 22		08.50
Mar 16		06.20	Oct 15	07.00	07.05	Dec 25	09.00	
Mar 18		06.10	Oct 16	07.00		Dec 27		08.55

Table 2.

Minutes before sunrise at which song commenced

During Breeding Season

	February		March		April		May		June		
North West Ireland (Birkitt, 1935)											
	mid	end	mid	end	mid	end	mid	end	mid	end	Part of month
	40	40	45	-	56	70	-	84	-	-	
Kent (Clark, 1937)											
	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	
	-	-	-	53	60	56	-	62	63	57	
Edinburgh (present study) mean of 1970 and 1971 values.											
	33	33	42	48	51	54	54	48	51	54	

From Table 2 it can be seen that the time before sunrise at which song commences increases as the breeding season advances. The time of the first vocalation in relation to civil twilight (average of the values for 1970 and 1971) was five minutes after in January and February, 15 minutes before in March, 10 minutes before in April, 5 minutes before in May, 10 minutes after in June and July, 15 minutes after in September, 10 minutes after in October and 5 minutes after in November and December. Blackbirds therefore start earlier in the breeding season and when this comes to an end in June start singing or calling after civil twilight until the start of the next breeding season. Times were generally similar in 1970 and 1971 but were not exactly the same.

TABLE 3

TIME OF BLACKBIRD LAST VOCALATION 1970 AND 1971

	1970	1971		1970	1971		1970	1971
Jan 7		17.35	Jan 28		18.10	Feb 18		19.00
Jan 11		17.40	Jan 29		18.10	Feb 19	18.55	
Jan 12		17.40	Jan 30		18.15	Feb 21	18.55	19.10
Jan 13		17.45	Jan 31		18.15	Feb 22		19.10
Jan 14		17.45	Feb 3		18.25	Feb 23	19.05	
Jan 16		17.50	Feb 5		18.25	Feb 24	19.10	19.10
Jan 18		17.55	Feb 6		18.30	Feb 25		19.10
Jan 20		18.00	Feb 7		18.30	Mar 1		19.15
Jan 21		18.00	Feb 10		18.45	Mar 2		19.20
Jan 22		18.00	Feb 11		18.45	Mar 3		19.20
Jan 25	17.55	18.05	Feb 13		18.50	Mar 4		19.25
Jan 26		18.05	Feb 15		18.50	Mar 6		19.30
Jan 27		18.10	Feb 16		18.50	Mar 7		19.25

	1970	1971		1970	1971		1970	1971
Mar 8		19.30	May 11	21.45	21.50	Aug 29		20.50
Mar 9		19.40	May 12	21.45	21.55	Sep 11		20.20
Mar 10		19.35	May 13	21.50	21.55	Sep 14		19.55
Mar 11		19.35	May 14	21.50		Sep 15		20.00
Mar 13		19.45	May 16		22.00	Sep 21		19.50
Mar 14		19.50	May 17		22.00	Sep 22	19.45	19.50
Mar 15		19.50	May 18		22.05	Sep 24	19.45	19.45
Mar 16		19.55	May 19		22.05	Sep 28	19.20	
Mar 18		19.50	May 20		22.05	Sep 30		19.25
Mar 19	19.50		May 21		22.05	Oct 1		19.25
Mar 20		20.00	May 22		22.10	Oct 2		19.25
Mar 21		20.05	May 23		22.05	Oct 7	19.00	19.10
Mar 22		20.05	May 25		22.15	Oct 8	19.00	19.15
Mar 23	20.15	20.05	May 27		22.20	Oct 10	19.00	
Mar 24		20.10	May 29		22.25	Oct 12	18.50	19.05
Mar 25		20.10	May 30		22.30	Oct 13	18.50	
Mar 27	20.20	20.15	May 31		22.30	Oct 14	18.50	
Mar 28		20.15	Jun 1		22.35	Oct 16	18.45	
Mar 29	20.20	20.15	Jun 2		22.30	Oct 19	1-.40	
Mar 30	20.25	20.15	Jun 3		22.30	Oct 20		18.40
Mar 31		20.20	Jun 6		22.40	Oct 22	18.35	18.35
Apr 1	20.25	20.20	Jun 7		22.35	Oct 25	18.25	18.40
Apr 9		20.45	Jun 9		22.35	Oct 27	18.15	18.25
Apr 10	20.40		Jun 12		22.25	Oct 30	18.10	18.15
Apr 11	20.40	20.45	Jun 13		22.25	Nov 2	18.10	18.10
Apr 12		20.50	Jun 14		22.30	Nov 3	18.10	
Apr 13	20.45	20.55	Jun 15		22.25	Nov 4		18.05
Apr 14	20.45	20.55	Jun 18		22.25	Nov 6	18.00	18.15
Apr 15	20.50	21.00	Jun 21		22.25	Nov 7	17.55	
Apr 16	20.50		Jun 22		22.25	Nov 9	17.55	18.05
Apr 18	21.00		Jun 24		22.25	Nov 10	17.50	
Apr 19	21.00	21.05	Jun 26		22.35	Nov 12		17.55
Apr 20	21.00	21.05	Jun 27		22.30	Nov 14	17.45	17.50
Apr 21	21.00	21.05	Jun 28		22.25	Nov 15	17.45	
Apr 22	21.00	21.05	Jun 29		22.25	Nov 17	17.35	
Apr 23	21.05		Jun 30		22.25	Nov 20		17.35
Apr 24	21.05		Jly 2		22.50	Nov 23	17.30	
Apr 25	21.10	21.15	Jly 3		22.40	Nov 25		17.30
Apr 26	21.10	21.20	Jly 4		22.35	Nov 28	17.25	17.25
Apr 27	21.15	21.20	Jly 5		22.35	Nov 29	17.15	17.25
Apr 28	21.15	21.20	Jly 7		22.40	Nov 30		17.30
Apr 29	21.20	21.20	Jly 8		22.40	Dec 1		17.25
Apr 30	21.20		Jly 9		22.35	Dec 2		17.25
May 1	21.20		Jly 10		22.10	Dec 3		17.30
May 2	21.25	21.30	Jly 11		22.10	Dec 4	17.20	
May 3	21.35	21.35	Jly 12		22.10	Dec 5	17.20	
May 4	21.35	21.35	Jly 13		22.10	Dec 7	17.20	
May 5	21.35	21.40	Jly 14		22.10	Dec 9	17.20	
May 6	21.35	21.35	Jly 19		22.00	Dec 16	17.05	
May 7	21.40		Jly 28		21.40	Dec 17		17.20
May 8		21.40	Aug 4		21.35	Dec 20	17.25	
May 9	21.40		Aug 7		21.30	Dec 25	17.15	
May 10	21.40		Aug 11		21.25	Dec 27		17.20

SEASONAL CHANGE IN THE TIME OF BLACKBIRD FIRST VOCALATION IN SOUTH EDINBURGH

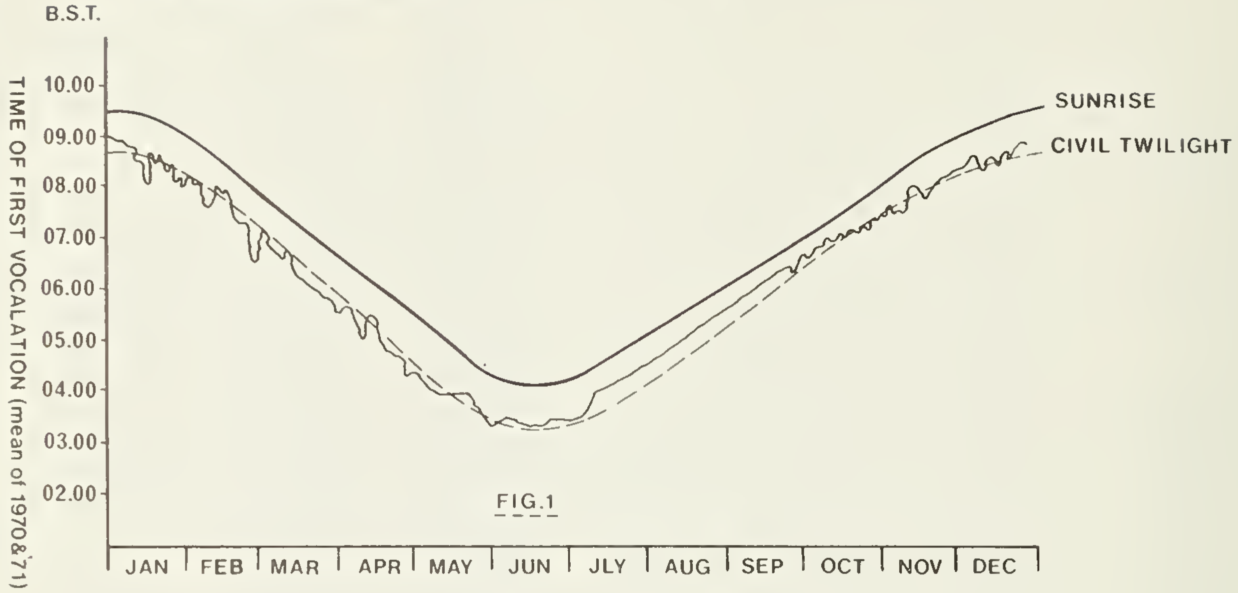

FIG.1

SEASONAL CHANGE IN THE TIME OF BLACKBIRD LAST VOCALATION IN SOUTH EDINBURGH.

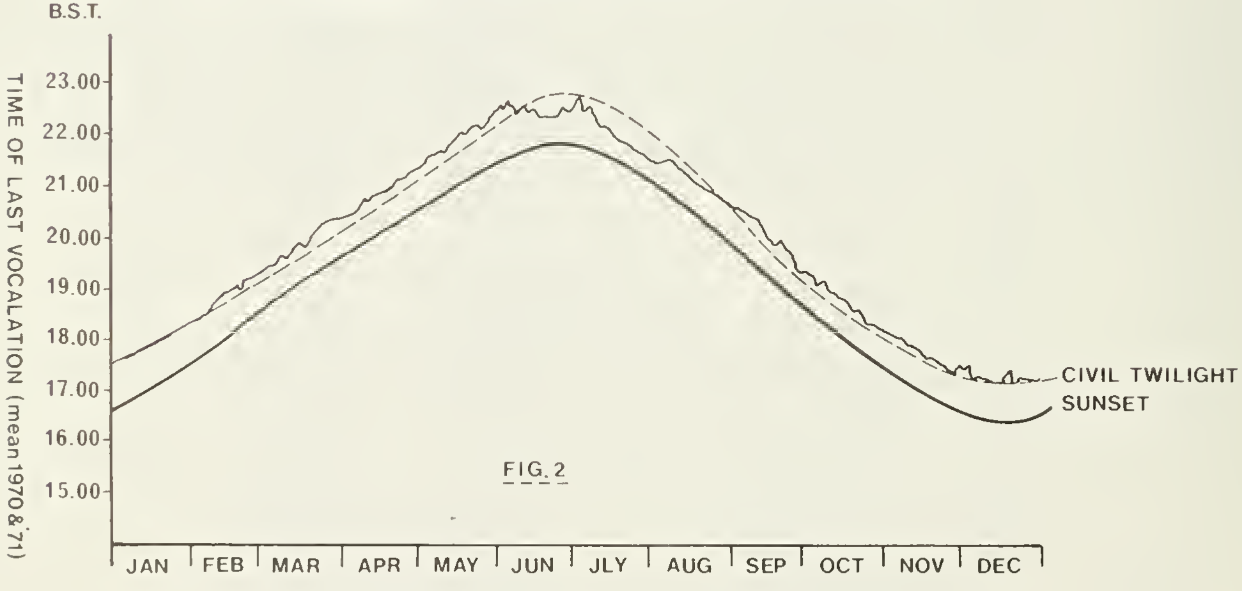

FIG.2

Dusk Chorus

The duration of the dusk chorus increased from thirty minutes in early spring to two hours thirty minutes at the height of the breeding season.

The blackbird was heard to sing at least ten minutes longer than the robin, but it stopped singing as much as fifteen minutes before the song thrush.

The graph of the latest blackbird song or call (Table 3 and Fig. 2) indicates a time up to ten minutes after civil twilight throughout the year except at the summer solstice when it may be as much as twenty minutes before civil twilight. The time after sunset varied, from thirty minutes at the equinoxes to one hour at the beginning of June.

The last vocalation was five minutes after civil twilight from September, to February, ten minutes after in March and April but two minutes before in May and twelve minutes before in June. The dusk times of 1970 and 1971 were closer together than the dawn times, being within six minutes of each other.

The effect of weather at dawn

(a) During the song season

In order to assess the effect of weather a scale of song from moderate to vigorous was used. On no occasion was the dawn chorus prevented by bad weather. On six mornings the dawn chorus was only moderate, the lack of vigour being due to cold weather; on only three of these was it cold, damp and still; on the remaining three days the weather was variable.

On ten mornings the chorus was good, the associated weather being stillness. On five of these days it was cool, still and damp, and on three, warn still and dry.

The chorus was very good on six mornings. On each it was cold, and on four of them it was also still and damp. On eight mornings the song was vigorous, each of these days being still. The best chorus occurred on 18th February 1971 when it was misty, drizzly, mild and still. On twelve mornings in February, when it was damp and mild. the chorus began early.

(b) During the season of no song

At the end of the song season the dawn chorus was very short with no vigour, and in bad weather was lacking. As the "chack and chook" season advanced the amount of calling at dawn gradually increased, and as in the song season the best chorus was on mornings that were warn, still and damp. On 4th November 1971 the chorus was prevented by wind, on 11th November it was mild and the chorus began earlier and on 8th December it was vigorous during rain.

The effect of weather at dusk

(a) During the song season

On very overcast evenings dusk song began early, and finished about ten minutes before the expected time, when it was almost dark. Twelve evenings had no chorus because of bad weather, each being windy, and it was also dry and cold on four evenings, the weather on the remaining evenings being very variable.

The chorus was moderate on twentyseven evenings, the main weather conditions being seven windy, cold and dry, six still, warm and dry, and two windy, cool and damp. On nineteen evenings the chorus was good; four of these were still cold and dry, and four were still, warm and dry. Only three evenings were windy.

Twentythree evenings had very good song, fifteen of which were still warm and dry, and most of the others were dry. The song was vigorous on eighteen evenings. Seven of these were still, warm and dry, and six were still cool and damp. Most of the other evenings were damp or misty.

(b) During the season of no song

At the end of the song season there was little sound at dusk for six weeks, whatever the weather. During this period in 1971 chooks were heard on only six evenings. Regular chooking began again during the second week of September when it was damp. Again there was a preference for warm, still and damp evenings, the chorus lasting longer on clear evenings. Chooking was vigorous during a snow shower on 20th November.

Seasonal change

The average song season extends from February until July, but lasts longer in towns. During the rest of the year only calls are heard. Song began with sub-song in Edinburgh at dusk (1800 hrs) on 29th January in 1971 on a mild, still and wet evening. At dusk on 5th February, in mild weather one bird was heard singing full song. Two birds sang on the 6th and 7th, and more than two sang from the 8th to the 11th, at dawn as well as dusk.

Song ceased with some windy weather on the 12th February, and did not begin again until the 18th, after a five-day cold spell with snow. Three or four males were heard singing on the 22nd, and by the end of February most, if not all, males in the district were singing.

On 1st March one sang very vigorously at dusk, although it was windy cold and wet. Song occurred in the afternoon, too, on the 3rd, and on the 5th one male sang all afternoon. From 14th March onwards all males sang vigorously at dawn, occasionally through the day, and from one to two hours continuously at dusk, with less than five minutes of chinking before going to roost.

Maximum song was reached in mid-April, and continued until the end of May. After hatching, when the male assists with feeding, the amount of song decreased temporarily. But males without nests, or with failed nests showed no such decrease.

Decline was indicated by the cessation of song well before dusk on 6th June, and on the 9th there was more chinking than song. From the 20th to 24th there was a temporary resurgence of song during a wet spell. On the 26th and 27th June two males sang with full vigour at dusk, and on the 28th at dawn (in warm, clear conditions) but with more chinking at dusk than in May.

There was still vigorous song at dawn and dusk at the beginning of July, and for five warm evenings, from 4th to 8th there was vigorous song. On the 9th there was little chooking, on the 10th the song lacked vigour, and from 11th to 13th there was neither song nor chooking, although there was some song during the day.

During the middle of July only sub-song was heard at dusk. Full song was heard at dusk on the 22nd possibly stimulated by the first rain since the 4th. Despite rain during the next three days there was no song, and little chooking. A blackbird sang sub-song from its spring song post on the 28th July, and the last song of the season was heard on 7th August, the remaining part of the month being silent.

Chooking increased at dusk during September, and by 2nd October had become vigorous. On the morning of 31st October sub-song was heard, which can be regarded as a normal instance of out of season singing. In November courting began, and there was an associated lengthening of the dusk chorus. Its vigour during November and December can be attributed to mild weather.

Discussion

The findings of the present study in general confirm those of previous workers in other areas. The song season began with sub-song at dusk at the end of January, but was discontinued in mid-February during wind and snow.

The daily dawn chorus began on average about 45 minutes before sunrise in February and March compared with an average of 43.76 minutes found by Marples (1939). This is approximately the time of civil twilight which is defined as the time at which a human being can see satisfactorily. The same conditions would therefore appear to apply to birds. The time before sunrise at which song commenced, however, increased as the season advanced.

Although the dawn chorus begins about the time of civil twilight throughout the song season, it began somewhat earlier from March to June, and somewhat later from September to November, as found by Armstrong (1963). This gradual earlier and earlier commencement of the dawn chorus as the season advances does not necessarily mean that birds sing at lower light intensities since the time between civil twilight and sunrise increases as the season advances.

The later cessation of the dusk chorus in winter, with a maximum of ten minutes after civil twilight during the breeding season, may be associated with the longer time needed to obtain food at these times.

The variation between years can probably be explained by differing weather conditions and variation in the stage of nesting. The smaller variation in the time of ending of the dusk song compared with the onset of the dawn chorus, could be due to weather conditions having less effect when the birds are awake (at dusk) than when they are asleep (before dawn).

The great daily fluctuations in the dawn chorus graph in January 1971 may be explained by birds being woken by lights from houses, although mild weather may have made a contribution. It is known that night song can be stimulated by moonlight (Armstrong, 1963). Night song was heard at 21,15 hours on 11th April 1971. This was a long "chacking" song flight in darkness, 30 minutes after the last vocalation of the dusk chorus. It was moonlight at the time, and was the night after a full moon. Calls were also heard on 8th November 1971 at 04.10 hours two hours before the dawn chorus, and a week after full moon.

Although there was no close association of dawn chorus strength with weather, the most song appeared to occur on still, damp and mild days. At dusk since all weather conditions were found with each strength of song, it was difficult to discern any close association of weather with the strength of dusk song, except for the reduction due to wind.

SUMMARY AND CONCLUSIONS

1. The blackbird is among the first birds to sing in the morning, but not always the last to sing at night.

2. The time of the blackbird's first and last vocalations lie around civil twilight throughout the year, with little variation in the time from year to year. Light intensity is clearly important in the control of the annual song season.

3. The song season lasts from January to July, and the dawn chorus starts at low light values in March and April, but high light values in June and July.

4. Bad weather (particularly wind) reduces the amount of song, but not its vigour. Still, damp and mild weather provides the best conditions for song.

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S.N.L. Ryder

PLANT A TREE IN '73 AND THEN ......?

by R.H. WATSON

INTRODUCTION

In the year 2000 most of us will have forgotten which year was European Conservation Year but some of us will remember that 1973 was Tree Planting Year, thanks to the slogan "Plant a Tree in '73". The earliest use of the slogan I can find was in a letter from the office of the Edinburgh Parks and Recreation Department in April 1972.

AIMS OF THE YEAR (From S.D.D. Circular 129/1972)

The purpose of Tree Planting Year which is intended for both town and country, is not only to encourage tree planting in 1973, but also to stimulate longer term public awareness of the contribution that the planting - and care - of suitable trees in well-chosen sites can make to the improvement of the environment. The 1973 campaign is thus intended to provide an impetus for a continuing concern by all sectors of the community for the planting and care of trees for amenity purposes.

THE FIRST SIX MONTHS IN EDINBURGH

The following list of some of the events of the first 6 months of 1973 gives an indication of the Corporation's involvement.

A Tree Planting Week was held during March with 9 main ceremonies involving the Lord Provost, Councillors, 6 Community Associations, also staff and hundreds of pupils from 12 schools.

Girl Guides planted trees at 3 churches in the Muirhouse area and at Meadowbank Sports Centre.

Officials of the Edinburgh/Forth and South East Federations of Townswomens' Guilds, together with their National President and the Lady Provost, planted an avenue of trees in The Meadows. As a result it has been designated Townswomen's Guild Walk.

During the General Assembly of the Church of Scotland, the Lord High Commissioner, Lord Ballantrae, planted a tree at Drummond Secondary School, and with Dr Selby Wright, the retiring Moderator, and the Secretary of State for Scotland, planted trees in the Canongate Churchyard.

Over 20,000 trees of various sizes and species have been planted throughout the city by the Corporation.

During Tree Planting Week the Mound "Badge" commemorated Tree Planting Year as does this year's Floral Clock design.

The Forestry Officer contributed to "The Scottish Garden" programme on B.B.C. Radio and talks were given to various Community and Amenity Organisations. Numerous letters and over 1000 telephone calls were dealt with.

Throughout the period good coverage of events was given by the Edinburgh Evening News by way of news items, photographs and articles.

PUBLIC INVOLVEMENT AND AWARENESS

A similar list could be produced by most cities and counties, for instance, Miss World planted a tree in Aberdeen, and in Glasgow, Senior Parks Officers at their Annual Conference found themselves physically involved in tree planting. These occasions are the few involving celebrities or the public and I would hope that in the future every year will produce a good crop of tree planting ceremonies and schemes.

The public, through amenity societies, community associations and youth organisations will no doubt become more involved. They will wish to have a greater say in what happens locally and will expect their views to be considered. They will also expect sufficient money to be available for capital works, although the question of maintenance may be overlooked. This applies to recreational facilities, to countryside schemes, to landscaping and to tree planting. All this time the professional tree planters will be working away steadily with the greater part of their work going almost un-noticed.

As public involvement develops into an awareness of the importance of trees, so knowledge will increase. Tree planting by the public will be done more carefully and with more concern for the use of suitable trees - trees appropriate to their setting. Trees will also be tended and managed; 'lopping' and 'topping' will be less popular, instead crowns will be thinned or 'lifted' and when trees become overcrowded a proportion will be removed as thinnings, giving the remainder room to grow. It works with carrots - and it works with trees.

Is the 'conservationist' who objects to trees being thinned out or who opposes the replacement of an old but dangerous tree much better than the youth who damages a newly planted tree? Both resent change and are protesting in the way that comes easiest. Both make life difficult for the professional, and by their actions suggest that his knowledge and judgement are suspect.

The professionals must therefore become more professional. At the planning stage they must consider all the facts, co-operate with the public and produce imaginative but realistic plans. In some cases more trees will be specified, in other cases fewer, but today's plantings should not become tomorrow's problems. The professionals must set standards and give the public a lead - planting, pruning and maintenance must be to a high standard. This may involve staff "shake-ups", training courses, open days and the like; progress may be slow but it must come. The new specialism of arboriculture is only just emerging, but it is an important and necessary specialism and it is here to stay.

THE SCIENCE OF ARBORICULTURE

Arboriculture is not a new term but one which has been recently revived. Horticulture (from Latin, hortus, a garden) concerns growing plants in gardens, silviculture (from Latin, silva, a wood) concerns the management of woods, forests and plantations, whereas arboriculture (from Latin, arbor, a tree) is most usually defined as the management of trees - and shrubs - for their amenity rather than their commercial value. The unit is frequently the single tree, but maintenance of tree cover in perpetuity is one of the main objects of management. Trees are grown for their beauty or their contribution to the landscape, and woodlands are managed with all aspects of conservation in mind. As far as possible drastic changes are avoided and the felling of trees is frequently delayed. In certain woodland areas, trees may be allowed to die, fall and rot without human interference. If they also regenerate we then have a form of natural woodland of particular interest to students of natural history.

In the impossible situation where the public expect that trees and woodlands will always look the same - never ageing - the arboriculturist requires to have the management skills of the silviculturist, and to have these skills highly developed. While managing a living, growing crop the public must be kept as happy as possible. When trees have to be felled to allow the establishment of a new crop there is a danger of trying to be too kind to too many trees. To avoid this, the arboriculturist has to consider living trees and people, and decide what is best for all.

When planting, the commercial forester considers soil, climate and above all eventual markets for his produce. The amenity forester considers primarily the aesthetic suitability of the tree. Will it look right? In a small garden, large-growing trees are out, equally small trees are out of place in the vicinity of large buildings. If these are also dark in colour trees with light-coloured foliage look best, and although greenery is desirable in an urban housing area, most residents consider light even more desirable. The arboriculturist thus has to have a knowledge of a great variety of plants, and the ability to specify a suitable plant. If trees are not suitable he should be able to suggest a substitute. He is a combination of forester, horticulturist and landscape architect.

A FEW SUGGESTIONS FOR PLANTING

Where there is ample space available Norway Maple, *Acer Platanoides* could often be planted in place of Sycamore which grows almost like a weed. Against a light background the cultivar *'Schwedleri'* is most attractive with a pleasant purple foliage in the spring. The *alders* although much neglected are attractive trees of pyramidal habit which will grow in most soils being useful pioneer trees. The common lime suckers freely, and is prone to attack by aphids, which results in an objectionable "honeydew" and should be avoided. Three very useful limes are the red-twigged lime, Tilia platyphyllos, rubra, the small-leaved lime, Tilia cordata and the hybrid Tilia xeuchlora.

Medium sized trees worthy of planting include several species of birch with the native Silver birch, Betula pendula probably as good as any. Other attractive birches are B. ermanii, B. jacquemontii, and B. papyrifera. The bird cherry, especially Prunus padus 'Watereri' is an extremely attractive often striking tree with the flowers produced in long, hanging racemes.

In small gardens, a flowering cherry is often the first thought, but why not a pear such as the willow leaved pear, Pyrus salicifolia or a crab apple such as Malus floribunda or Malus 'Profusion'; if you like crab apple jelly plant Malus 'John Downie'. If you insist on a cherry try Prunus serrula (attractive bark) or Prunus sargentii (coloured leaves in spring and autumn). If you have only a square metre, you could plant the Lombardy Poplar cherry, Prunus 'Amanogawa'.

A.D. 2000

We are all conscious that the man-made world will be very different at the end of the century and the contrast with the natural world will be even greater than it is at present. We must therefore diligently maintain our countryside, open spaces and trees, together with their flora and fauna.

The trees planted in 1973 will thus be playing their part in the year 2000, with many years still ahead of them.

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SOME OBSERVATIONS ON BADGERS

In order to try and find out the effect of heavy human pressure on the behaviour of badgers, evening watches were kept over a six month period from the middle of March to the middle of September at setts within the City boundary, and at one country sett.

The first town sett had to be abandoned during the second half of May after undergrowth became so thick that it was difficult to see what was happening, and this sett was only occasionally watched from then on. A second town sett was then chosen where ground cover was sparse. It was during May that we also started watching at a country sett, which was well away from houses and footpaths, but which could usually be watched through field glasses from a car. This latter sett was on a grassy slope, and during July when the grass was very long we were forced to watch close at hand, but car watching was resumed at the beginning of August.

When possible, watching was done in pairs, and in all, 54 watches were made - 35 in the town and 15 in the country during which badgers were seen, and a further 4 watches when no badgers were seen.

Watching in the town had its problems. Not only did we have to take wind direction and available cover into account, we also had to keep out of view of the public, and particularly their dogs, which were always delighted to find us and unwilling to go away. Owners would then come in search of their dogs with even more disastrous consequences!

In a very short time it became obvious that the badgers emerged very regularly at both town and country setts, the curves running parallel to the sunset curve up till midsummer, but the town badgers coming out one hour later than the country badgers. After midsummer the curves no longer remained parallel to the sunset curve as emergence was relatively earlier until the beginning of August, then becoming later and later until by the middle of September the town badgers were coming out after it was too dark to see. Attempts were then made to watch by moonlight at the town sett but insufficient light penetrated through the overhead leaves to be of much help. The one hour difference in times between town and country was maintained throughout.

The town badgers showed marked ability to adapt to disturbance and the proximity of people. The recent passage of people close to or over a sett often caused an emergence delay of only five to fifteen minutes after the disturbance had ceased. Noisy groups of children on nearby ground would also delay emergence till about ten minutes after the noise had ceased. We saw virtually no true fear of people, except when badgers were running towards us and only became aware of our presence at four or five feet. Usually there was simply an attitude of caution, with no fear, which probably explains why there were so few evenings on which we did not see badgers. On one occasion a couple sat down nearby, laughing and talking loudly. A badger came out and listened for a while before ambling back underground. Another time, an impatient watcher - not one of us! - was pacing back and forth on top of the sett totally unaware that a badger came out and watched him for a couple of minutes. On another evening we found two people already watching when we arrived who were not well placed for the wind direction. While they were leaving, badgers came out and watched them walk away.

It has been said that badgers will emerge earlier on dark nights and later than average on light nights. We watched on many dark nights and on no occasion did they come out any earlier. We also watched on many light evenings but found that emergence was delayed only if the day had been exceptionally fine, when daytime disturbance was presumed to have been particularly heavy. It may have been that on these days the setts suffered more than usual from the only disturbance which we found affected them much - dogs running from entrance to entrance, barking and snuffling down the holes.

We watched frequently at the first town sett during April in the hope of seeing the young cubs above ground. Two were eventually seen on 26th April, but from their size it was unlikely that this was their first outing. We were of the impression that cubs were being kept underground until very late at night this time of year. Unfortunately there were no cubs at the second town sett.

Behaviour in the immediate vicinity of the town setts was rather limited. We saw play only once, an occasional brief scratch, and no cleaning of claws on trees. No vocal noises were heard at either of the town setts. In these disturbed areas the animals tended to come out without much hesitation, and either leave the area straight away heading for a more secluded area, or start collecting bedding immediately. The changing of bedding was really the only activity we saw at the town setts. The boar would come out first and would pull uphill at incredible speed large bundles of dry bedding, running backwards with a galloping gait. Rather later, the sow would lend a hand but she was nervous and inefficient, frequently dropping her load, and as often as not, returning to the sett without it. We noticed that the gathering of fresh bedding came first, then later on, earth and old bedding would be flung out but always at a different entrance to the one used earlier for taking in bedding.

From the six months watching we came to the conclusion that the times of emergence of both town and country badgers followed the same pattern, though the actual time in the town was later. In areas liable to disturbance, young cubs may be kept underground until much later at night, and activity in the vicinity of the sett is reduced to a minimum. A much greater tolerance to the presence of people has also been developed by the town badgers.

I am most grateful to all those who were willing to sit out in all weathers, and to suffer torment by midges in the summer, in particular Elizabeth Coleman, Nora Henderson and Sylivia Love who shared most of the excitements and disappointments with me.

Elizabeth Farquharson

November 1973

BIRDS ON CORSTORPHINE HILL

Even though housing developments encroach more and more over the fields which once bordered the "Public Park" which is Corstorphine Hill, it still remains a valuable habitat for a surprising number of birds. Some members of the Edinburgh Natural History Society have been making more or less regular visits to the area over the past year, as part of the wider survey being carried out by Mrs. Farquharson, and noting the species seen. No attempt has been made at nest-hunting as this only makes for extra disturbance for the birds, and fortunately the once popular hobby of egg-collecting among school-children seems to be unfashionable as well as illegal!

The presence of some of the birds is obvious to every casual visitor to the Hill - the ubiquitous blackbirds, the robins wrens and chaffinches, the blue-tits in restless activity, the raucous and conspicuous magpies, the resident jackdaws in the quarry area - all can be seen summer or winter with the minimum effort. But others are more elusive, and a good deal of neck-craning is necessary to catch glimpses of, for example, the tiny goldcrests flitting in the upper branches of larch or pine, and tree-creepers, though by no means rare on the Hill, are not easy to spot as they spiral, mouse-like, up the trunks of trees.

A few birds, though regularly heard calling, have proved very reluctant to show themselves at all, among them the tawny owl, green and great spotted woodpeckers and pheasant. The same might indeed be said, though to a lesser degree, of our summer visitors, the warblers. The songs of the commonest, the willow-warbler, can be heard all over the Hill from the end of April, but the birds themselves remain inconspicious in the greenery. Of the winter visitors, the redwings are the most likely to be encountered, usually in small flocks foraging among fallen leaves.

Four species of tit occur here, the least common being little family parties of the attractive long-tailed tit. The resident kestrel may be spotted at any time of the year as he quarters the Hill, or perches on one of his regular look-out points. Even the common carrion-crows are worth a closer look, as at least two specimens of the dark hybrid between the Hoodie and Carrion crows have been noted.

A rarity mentioned in past records has been a hawfinch, and recently a tentative identification was made, on a very brief sighting, of a woodcock. In a good "waxwing year", parties of these striking winter visitors may be seen on berried bushes at the edge of the woods.

Birds which have no direct connection with the Hill but which can be spotted from any viewpoint include many gulls from the Forth, predominantly common, herring- and black-headed gulls, and if the time and the weather are right, the skeins of migrating wild geese, as Edinburgh is fortunate enough to be on one of their "flight-paths".

The following list is of the birds definitely seen in the past year, with (S) and (W) indicating summer and winter visitors, and with an * denoting proved or probable breeding evidenced by the carrying of nesting material, or food for young, or the sight of parent birds feeding newly-fledged young. Any additions to the list or observations from members of the Society confirming local breeding will be welcomed.

- Kestrel
- Pheasant
- Stock-dove
- * Wood-pigeon
- (S) Cuckoo
- Tawny Owl
- (S) Swift
- (S) Swallow
- Green Woodpecker
- Great Spotted Woodpecker
- * Carrion Crow
- * Jackdaw
- * Magpie
- * Great Tit
- * Bluetit
- Coal Tit
- Long-tailed Tit
- Tree-creeper
- * Wren
- * Mistle-thrush
- (W) Fieldfare
- * Song-thrush
- (W) Redwing
- * Blackbird
- * Robin
- (S) Willow-warbler
- (S) Wood-warbler
- Goldcrest
- (S) Spotted Flycatcher
- * Dunnock
- * Starling
- * Greenfinch
- * Linnet
- Redpoll
- * Bullfinch
- * Chaffinch
- Yellow-hammer
- House-sparrow

Margaret Watson

BUMBLE BEES IN THE LOTHIANS 1973

April and May were cold and wet. After a hail storm at Wanside Reservoir in the Lammermuirs on 5th May, some E.N.H.S. members saw 'lots of half-dead red-tailed bumble bees' on a willow tree. A week later, after another hail storm, I came upon the same willow, the only fodder plant in sight at that time. On it were clustered upwards of fifty queen bumble bees of three species. The bees were clinging to the catkins and to one another. They were so cold that they were torpid. They could be lifted off and had energy only to raise and wave a leg, a reaction we have frequently observed when bumble bees are disturbed. These bees would remain on the willow till the weather, and they, warmed up and then they would be able to carry on with food collecting and nest-building. Nearly all of the bees were the 'red-tailed ones', Bombus lapponicus (Mountain Bumble Bee). There were about a dozen B. lucorum (Small Earth Bumble Bee) and two or three B. jonellus (Heath Bumble Bee).

On 6th June on Corstorphine Hill there were very few bees about. A few B. lucorum queens were seen entering and leaving holes in rough grassland - typical nest sites. These colonies could not yet have produced many workers. B. hortorum (Small Garden Bumble Bee) a yellow and black banded bee with a very long tongue, B. agrorum (Common Carder Bee) and a male B. pratorum (Early Nesting Bumble Bee) were also seen. The main food plant was Rhododendron.

In connection with the Bumble Bee Atlas scheme a recorder and four collectors, members of the Society, have offered to help. The Lothians are now fairly well covered and we are extending our activities into the surrounding counties.

Identification poses many problems. Workers vary in size according to their food supply as they grow from egg to pupa. Some very small workers of closely related species are virtually indistinguishable. Queens and males are much easier to identify but, even so, they vary considerably and several melanic forms have been collected this year. Hence sight records are not very reliable particularly from areas new to the observer.

In all the 10 Km squares of the Lothians that have been adequately recorded, B. lucorum has been found in good numbers. At the opposite extreme we have only two records of B. soroensis (Ilfracombe Bumble Bee).

Superficially it is very similar to B. lucorum. More records of this species will be required before its distribution pattern becomes clear. B. lapidarius (The Stone Bumble Bee) is a southerly species and this is getting near the limit of its range. Its distribution,(as seen from the map) is mainly coastal in the Lothians. In England it is a much commoner bee and is not confined to the coast.

E.M. Smith

BOTANICAL NOTES

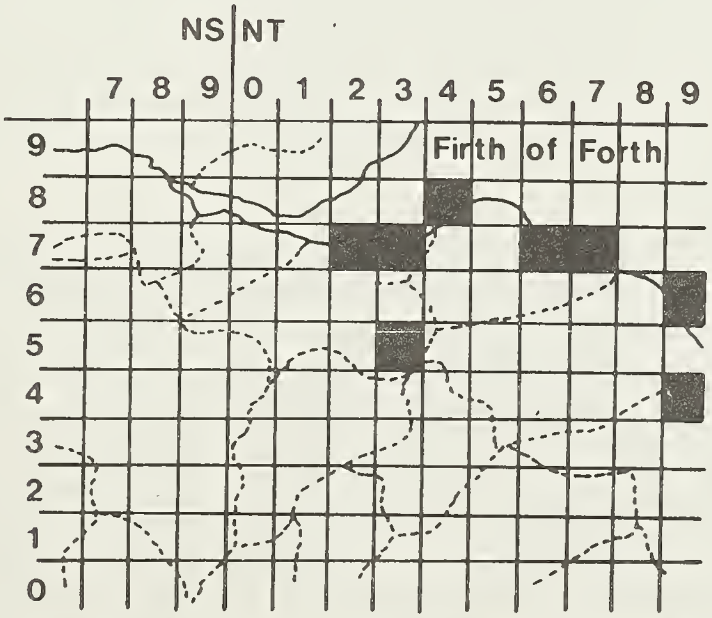
Occurence of some unusual plants

Pellitory of the Wall (Parietaria diffusa). There is a well-known and long established colony at West Barns in East Lothian. This summer I found it thriving at Polton Mill, Midlothian. It looked as though it had been there for several years.

Dark Mullein (Verbascum nigrum). This is a plant I had never seen before. A solitary specimen, also at Polton Mill, is an obvious newcomer. It will be interesting to see if it succeeds in establishing itself.

Earth Star (Geaster triplex). I first saw this fungas at Tyninghame during an E.N.H.S. fungi excursion led by Robin Vane fifteen or more years ago. This colony is still doing very well. About 100 fruiting bodies were counted this year. I do not know of any other station for this fungus. It occurs frequently in beechwoods of the south of England.

E.M. Smith



Preliminary distribution map of Bombus lapidarius in South-East Scotland. 1973

ISLAND BIRD COUNTS 1973

R.W.J. Smith

	Craigleith	Lamb	Fidra	Inchkeith	Inchmickery
Fulmar	60	3	38	400	
Cormorant	12	228			
Shag	164	244	17		
Shelduck			1		
Oystercatcher			5	5	1
Great Black Back	2				
Lesser Black Back	350	2	10	X	
Herring Gull	5000	400	250	X	1
Kittiwake	326	116	218	407	
Common Tern					750
Artic Tern			NIL		
Roseate Tern					50
Sandwich Tern					328
Razorbill	34	8		7	
Guillemot	560 bds on cliff	340	5		
Puffin	1400 bds land/sea			450 bds land/sea	

In the above table the figures for Fulmar represent occupied sites - not necessarily breeding. Guillemots on Craigleith and all Puffins are individual birds. All other figures are counts of breeding pairs or nests. X means present but not counted.

Shags continue their increase on the East Lothian islands and the Fidra colony seems to be well established. A pair were reported with a nest on Carr Craig near Inchcolm and they probably bred. There is no previous record of breeding in Inner Forth although we found a bird on an empty nest several years ago on Inchkeith. The number of Guillemots breeding on Lamb has shot up from 200 pairs to about 340 pairs since 1971 - an increase of 70% in two years - and they, too, are consolidating their position on Fidra.

More Puffins than ever before were seen on and around Craigleith and Inchkeith. Many of these will be non-breeding birds but they are indicative of the healthy state of the species in Forth. A slightly alarming side-effect of this increase became apparent during an August visit to Inchkeith. In June numbers of birds were sitting around burrows on the steep slopes of the north-west side of the Island. These 60° slopes were covered with vegetation and apparently completely stable. By early August two sections of slope had 'slipped' and were now 45° screes of small granulated particles apparently of a basaltic origin. Fortunately there is a storm beach at the foot of the scree so that there is little danger of heavy seas washing the cliffs away completely. This erosion may have been started by the burrowing of the Puffins.

The situation will have to be carefully watched and it will be interesting to note how soon the scree will become stabilised by a covering of vegetation.

During the summer a further cull of big gulls was made by the RSPB and Nature Conservancy. On the May the Conservancy killed some 10,000 gulls and have now cleared most of the island of gulls with the exception of some birds on the cliffs and those breeding in the two study areas. About 100 Herring Gulls were disposed of on Inchmickery and there was a very satisfactory number of terns breeding. The figure of 50 pairs for Roseates is hopeful but this is only one-tenth of their breeding strength on this island a few years ago. On Fidra, in spite of a cull of all the gulls on the central grassy part, no terns bred successfully. The increase of Herring and Lesser Black-back Gulls elsewhere on the island presents more problems for the future if this magnificent island is not to be ruined botanically.

On Inchkeith in 1972 we found a single first-year specimen of Tree Mallow. This year the same plant, though somewhat battered, was flowering well and Tree Mallow may well be able to establish itself on this island as it has done, in recent years, on Craigleith. The seed would probably have been carried in by a gull and it may be that the tremendous increase in gulls, with the incidental heavy manuring and trampling of vegetation, has created conditions suited to this very local and apparently specialized plant.

R.W.J. Smith

BRACO AND KILSYTH

The President Mr. McLeod led a bus party of 48 members on 8th September to visit the Roman fort LINDUM at Braco. Mr. Hannavy explained the layout of the site in a most interesting manner and members scrambled down defensive ditches and up on to the fortifications. Mr. Hannavy also pointed out an ancient pack bridge over the Knaik Water which was in dire need of repair. Reluctantly we left Braco and drove to Inverardoch where Mrs. Campbell kindly let us see her garden and 17th century tower house.

Mr. McLeod then led through Kippen, the Fintry Hills and Kilsyth Hills, a road with fine views to Kilsyth where we met Mr. Bob Currie, Planning Officer for Stirling C.C., and his colleagues, who explained the conservation work carried out. An old weathered bing was bulldozed to fairly natural contours, then planted with six different kinds of grass, best suited to the situation. In difficult places the grass seed had been mixed with paper mache to give some stability until roots had grown. The result was a pleasant green hill and only by looking carefully through the grass could one detect the coal waste on which it was growing. On a nearby hill which had been similarly treated a few years ago, cattle were grazing. It was an astounding transformation, and we thanked Mr. Currie and his colleagues for spending the afternoon with us and for all their interesting information. This was Mr. McLeod's last excursion as President, and it was a most delightful "Swan Song".

Connie Stewart

GREY MARE'S TAIL

Leader - Mr. A.J. Smith

Saturday 16th June 1973

This excursion was concerned mainly with the geological and botanical aspects of the area. The party left the car park and commenced walking up the left hand path leading to the base of the waterfall known as the Grey Mare's Tail. Quantities of the New Zealand willowherb - Epilobium brunnescens occurred on the sides of the burn at the start of the path. This is an alien plant introduced into Britain before the last war and has spread throughout the country particularly in mountain districts. The rocky area around the falls supported a sub-alpine flora, unusual at the comparative low altitude of 1,000 ft. Plants included Cochlearia alpina, Oxyria digyna, Saxifraga stellaris and Trollius europaeus. Of particular interest were the calcicoles, Asplenium viride and Melica nutans. A large amount of the Parsley fern - Cryptogramma crispa occurred, a fairly uncommon plant on the Scottish hills. Although not seen by the party, Saxifraga oppositifolia is said to occur near the falls.

Leaving this interesting botanical area, we followed the narrow path uphill. From here we had a breath-taking view of the waterfall as it cascaded 300 ft from the plateau above. In the far distance we could see the Moffat Water meandering its way slowly down the Moffatdale Valley and in the middle distance the Tail Burn flowing from the base of the waterfall to join the Moffat Water. Continuing our way uphill we reached the moorland plateau. The flora of the hillside was of a typical Nardus and Juncus squarrosus heath type, with the occasional interesting plant,eg Saxifraga hypnoides and S. aizoides in damp flushes and Antennaria dioica and Sedum roseum on the rocks bordering the burn. Several flowering specimens of Cloudberry - Rubus chamaemorus were the highlights of the acid bog area surrounding Loch Skene and its corrie.

The spectacular scenery of this region is a result of the "Work of Ice", for during the last Great Ice Age, the area was buried below a thick mantle of ice, which, as it slowly ground its way eastwards, modified the topography with its erosive action.

As the weather ameliorated and the ice sheet began to shrink, the higher hilltops appeared through the ice as nunataks. Then gradually, as the ice shrinkage continued, the corrie glaciers (Loch Skene) which had acted as tributaries to the main valley glaciers, also disappeared. With the melting of the valley glaciers (Moffatdale Valley) the deglaciation was complete. One of the most striking features resulting from the modifying effect of ice movement is the so called "Hanging Valleys" (Grey Mare's Tail Waterfall) which demonstrates the discrepancy between the levels of the valley floor and its tributaries.

As the party negotiated the path above the Grey Mare's Tail they observed a small group of feral goats feeding on the slopes higher up the valley.

The next locality visited was Dobb's Linn, a waterfall which is similar to the Grey Mare's Tail. The stream here, plunges down the vertical Silurian rocks in a series of steps and in doing so reveals a fine section through the Birkhill Shales. These rocks are highly fossiliferous, containing different species of graptolites, which can easily be collected from the screes. It was the graptolites which Charles Lapworth, a well known amateur geologist, used in 1878 to work out the correct succession for the rocks of this region. A plaque to his memory can be seen on the wall of the nearby Birkhill Cottage. Members of our party spent a rewarding hour collecting specimens of graptolites from the screes. The flora at this locality is very similar to that found at the base of the Grey Mare's Tail Waterfall.

George Bell

John Winham

KELTNEYBURN AND GLEN LYON

On July 21st-22nd, 25 members spent the weekend in Glen Lyon area.

Our President Mr. McLeod met us at Garth on a sunny morning and led us by car and later on foot through Drummond Forest, to the top of Drummond Hill where we inspected an iron age fort, and saw capercailzie, buzzard, collared dove, heron, tits, also clouded yellow and common blue butterflys.

After lunch we drove to Innerwick, visiting the church with its ancient bell, then following the Coire Dubh burn, seeing dipper, wagtail, wheatear, red squirrel, dragonfly and slow worm. A few members walked over the hill to Dall on Rannochside, while others spent the day on Ben Lawers, recording most of the listed flora.

On Sunday we met members of the Perth Society of Natural Science, led by their President Mr. Aitken, at Coshieville. We walked to Balchroich meadow and found common spotted, butterfly and small white orchids, field gentian, spignel, alpine bistort and many more plants. Mr. Aitken and his friends carried billhooks to slash the bracken encroaching on the meadow, which threatens to oust the more interesting plants. The deep gorge of the Keltneyburn and its waterfalls were fascinating.

After lunch we drove to Invervar in Glen Lyon, parking by permission of Sir John Imrie. After seeing an old lint mill we followed the burn by an old drove road near Carn Gorm where the stream was starred with Yellow Mountain Saxifrage, stonecrop, mountain sorrel and ferns.

We left our Perth friends promising to meet next year, and returned home after two perfect days.

Connie Stewart

WINTER EXCURSION 15th DECEMBER 1973

Bonaly - Torduff - Juniper Green

This outing, despite snow, cold and strong winds, was held as planned. Six people took part and enjoyed the experience. We walked from Bonaly Park, past Torduff and Clubbiedean Reservoirs to Mid Kinleith Farm. At the latter we sheltered and ate before descending the Poet's Glen on the Kinleith Burn. Being refreshed we descended the steep slope below Mount Purnassus, the Weaver Poet's home, to visit the Poet's Seat and Well. Sad to say vandals had cast down the inscribed memorial stone.

Force 6-7 S.W. wind, with pellet snow made observation difficult, but we were well rewarded by a cock and a hen stonechat on the slopes above Torduff Reservoir.

On the 14th the route had been surveyed and the bird tally for that day is added for comparison. A tendency for the smaller passerines to congregate near habitation was noted.

BIRD SPECIES TALLY

	14th	15th		14th	15th
tufted duck	X	-	blue tit	X	X
kestrel	X	X	coal tit	X	-
partridge	X	-	wren	X	X
great b.b. gull	-	X	blackbird	X	X
common gull	X	X	stonechat	-	X
bl. headed gull	-	X	robin	X	X
woodpigeon	X	X	dunnock	X	X
skylark	X	-	meadow pipit	-	X
carrion crow	X	X	starling	X	X
rook	X	-	chaffinch	X	-
jackdaw	-	X	reed bunting	X	X
great tit	-	X	house sparrow	-	X

X = Observation

C.P. Rawcliffe

Saturday 9th June 1973

Geological Excursion to St. Andrews

Leader, Dr C.D. Waterston - Royal Scottish Museum - Edinburgh

General

The object of this excursion was to examine some of the rocks which outcrop along the shore line to the east of Kinkell Ness about two miles from St. Andrews. At the outset, the geological setting of the surrounding area was described by the leader. The shore line consists mainly of sandstone, shale and occasional bands of limestone all belonging in time to the Calciferous Sandstone Series of the Scottish Carboniferous, thus giving them an approximate age of three hundred and forty million years. Subsequent to the sediments being laid down, the wide-spread volcanic activity which accompanied this period, emplaced dykes, vents and pyroclastic material amongst the sediments. Both the sedimentary and volcanic rocks have been folded and faulted as a result of stresses within the earths crust.

Sedimentary Rocks

The sediments outcropping at Kinkell Ness are composed mainly of sandstone and generally dip to the north at an angle of 20°. The sandstone is creamy in colour and shows both current bedding and ripple marks. A few hundred yards to the east, an interesting feature known locally as the Craigduff Dome was examined. This dome shaped fold structure is symmetrical and dips outwards in all directions at an angle of 20°. Plant fossils, mainly in the form of root impressions are common in the sandstone. The several marine bands are also fossiliferous and contain bivalves, brachiopods and gastropods. One marine band, the Encrinate Bed, was examined and several small crinoid ossicles were extracted from it.

Volcanic Rocks

To the east of Kinkell Ness lies a succession of volcanic rocks known collectively as the "Rock and Spindle Vent". The vent is named after the nearby rock stack which is itself a part of the volcanic sequence. The vent has been extensively studied by geologists and it is believed that the stages of its development are typical of such vents in East Fife. The initial outburst in the volcanism consisted mainly of gas discharge which produced the vent or pipe. This was followed by a continued period of pyroclastic activity during which large quantities of so called "ash" was ejected from the vent. Quantities of country rock ie sandstone, shale and limestone dislodged by gas activity were also ejected and these can be found buried in the ash deposits. The ejected material, formed round the vent, a well bedded ash cone which, on cessation of eruption, collapsed into the vent to produce steeply dipping, concentrically arranged ash beds.

The last stages in the volcanism took place mainly below ground with the emplacement of magma in the vent and surrounding sedimentary rocks. The magma, of a type known as monchiquite, was emplaced in two successive stages. The first intrusive stage was mainly confined to the ash filled vent and cooled in a pipe like form. The Rock and Spindle stack is the visible remnant of this stage. The base of the stack displays radiating spokes of columnar jointed monchiquite which is regarded as evidence of cooling in a pipe form. The upper part of the stack is composed of monchiquite packed with xenoliths of country rock dislodged from below by the rising magma. The upper and base portions of the stack are known as the Rock and Spindle respectively. The second and final intrusive stage emplaced dykes and dyke like masses of monchiquite into both the volcanic and sedimentary rocks of the surrounding area.

The return to St. Andrews was made via the Kinkell Braes where various Post Glacial features were examined. These included the seventy foot raised beach deposits upon which the caravan site is situated and erratic blocks of dolerite left behind by the retreating ice during the last Great Ice Age.

At the conclusion of the excursion, Dr. Waterston was formally thanked by Mr. W.A. Hall for his endeavours on behalf of our Society.

George Bell

References

Fife and Angus Geology an Excursion Guide - A.R. MacGregor.

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PORTMORE LOCH CIRCUIT 17.3.1973

Leaders: C.P. Rawcliffe and Mrs. Connie Stewart

Some 30 or more people gathered for this outing. The weather was fair with the wind S.W. at B.S.2. From the dam of the Loch views of male and female goldeneye were obtained with the males displaying, rolling the head and neck backwards and then forwards. A pair of great-crested grebe also displayed on the water, a redshank flew to and fro whilst on a shingle beach stood a pair of oystercatchers. The water level was well down but the fishermen were busy. Two meadow pipit landed at the water's edge: later it was to be noted that there was none on the hill.

Complete silence was kept as we went along the cart track skirting the wood. This was in the hope that we might see roe deer and in the certain knowledge that birds would be heard more easily. At this elevation, 1000', and in such terrain birds are not so plentiful and one has to work for them with ear and eye. To our right in a damp field stood a heron (frog hunting?), and not far away a cock pheasant strutted towards the shelterbelt. On the way such birds as Curlew, lapwing, carrion crow and woodpigeon were seen and/or heard, also robin and goldcrest, and at our picnic site redpoll were added.

After lunch it became necessary for me to leave the main party who were to proceed under the leadership of Connie Stewart as far as the Northshield Rings and some were to go even to the top of Jeffries Corse. I am told that kestrel, curlew and red grouse were seen, and a mistle thrush was heard singing. Also seen was a mountain hare in mixed seasonal pelage. I led a small party down by the loch side. On the way we logged mallard, teal, tufted duck, pochard, 1 red grouse, lapwing, redshank and 1 woodcock. The cock redgrouse gave excellent views of itself as it walked among the trees: quite out of habitat. Additionally we heard or saw bluetit, treecreeper and wren.

On a flat meadow adjacent to the loch end lapwings had taken up territories. Wigeon were reported from the loch, skylark were on the fields a little lower down, and the gulls that were seen were common and blackheaded: these latter had in some cases acquired the dark head. Towards the end of the afternoon several skeins of geese were seen to the north.

C.P. Rawcliffe

SCOTTISH WILDLIFE TRUST POND SURVEY, 1973

This is the second year of the pond survey being carried out by the Lothians Branch of the Trust to investigate the present state of ponds and other areas of water in the Lothians with particular reference to the breeding of amphibians. Our survey has suffered a sad loss in the sudden and untimely death of Bill Hall who had spent many week-ends working enthusiastically on West Lothian ponds. Many members of Edinburgh Natural History Society have again helped as well as Trust members, pupils of Pencaitland Primary School and other interested members of the public. The Lothians Branch Committee is very grateful indeed to everyone concerned for their efforts and much has been achieved.

It has not been an easy year in which to carry out pond studies. The prolonged lack of rainfall over winter and spring left the level of water in the reservoirs lower than it has been for a very long time thus leaving dry the shallow reedy corners so suitable for frog spawning and the deeper weedier levels where strings of toad spawn would normally have been twined. As well, the drought affected many flood pools usually filled by winter rains; there pools often dryout in summer but they hold sufficient water, most years, to allow young frogs to emerge. Many of their spring pools had no water in them in March and April; it was not until mid-May that there was sufficient rain to ease the situation somewhat.

The first report received of frogs returning to spawning grounds in the Pentlands was on March 18; the first sighting of toad spawn, in an Edinburgh quarry, was on April 21. As for newts, again, as last year they were nowhere plentiful save in a very few places. But, although not plentiful, they are to be found in various suitable ponds - given a great deal of perseverance, good observation - and good luck; that means a calm day with good light and a lively newt rising to the surface to expel a bubble of air with a small quiet plopping sound; if the newts are not lively one has then to turn up stones and whatever rubbish is lying around, taking care to replace all carefully as one goes along, and hope to strike the side of the pond and level of water which the newts happen at the time to frequent.

As for the ponds and wet places, it becomes increasingly clear as the survey continues, if one did not already know this, that there has been a notable decline in their number in the three counties of Mid, East and West Lothian since the present two and a half inch Ordnance Survey maps were published. This is mainly due to the rapid spread of urban development, the infilling of quarries, changing farm practice and other causes; and no suitable water means no place for a frog, toad or newt to breed. Oddly enough, there is one small fringe benefit for amphibians from the affluent society, to be seen in one or two places - the making of new duck pools for duck shooters. This is not so good for the ducks but our hard-pressed frogs and toads benefit.

There is still work to be done next year; we want to know in more detail, for example, how many ponds support both frogs and toads or even all three amphibians; there waters will clearly be important breeding sites to be protected by such means as are open to us; the interest and co-operation of the landowner in preserving the site can be sought or particular ponds can be listed as wildlife sites by local authorities. These and other measures are being taken as valuable breeding sites are discovered.

Once more, our thanks to all those who have recorded for the survey this year. We hope they will be able to continue their support next year and we look forward to sending them a full report of this years findings in due course.

E. Hamilton

BEHAVIOUR OF JUVENILE CUCKOO

On the afternoon of 6.7.1973, in company with Mrs. K. MacLean and my son I found, on a heathery brae alongside the Logan Burn, above Glencorse Reservoir, a juvenile Cuckoo, cuculus canorus, being fed by a Meadow Pipit, anthus pratensis. The Cuckoo maintained a wheezing call note that intensified as the foster parent drew near, and which only ceased when actually being fed. From time to time one caught sight of the red gape which, along with the persistent call note, possibly stimulated the Pipit to work so hard. Every few minutes the young Cuckoo would flutter and shift its resting place by several yards. As the foster parent only gathered food within a yard or two radius of the juvenile it became apparent that unless the latter did move, the food supply in the immediate vicinity would soon be exhausted, necessitating longer journeys and thus leading to a lower food intake by the Cuckoo. So the frequent moves by the juvenile Cuckoo, undoubtedly completely instinctive, were a self-protective device designed to ensure the greatest quantity of food in any given period of time.

C.P. Rawcliffe

On 17th August, while fishing on St. Mary's Loch, Selkirkshire Mr. G. Didcock observed several glowworm beetle larvae (Lampyris notiluca). The identification was confirmed by E.C. Pelham-Clinton of the Royal Scottish Museum.

I understand that the previous recording of glowworms in Scotland was in 1910, from Tushielaw (in the same area).

CUCKOOS IN SPRING

The Cuckoo cuculus canorus apart from having a fascination for the bird-watcher, has, I suspect, some peculiar sway over small birds, not least those that it may later take advantage of. Many years ago in May of 1946 I watched in an area of rough scrub, the behaviour of an adult male cuckoo and a Meadow Pipit, anthus pratensis. My notes show, "a large bird (Cuckoo) sat on the side of an elder bush; a small bird (Meadow Pipit) was moving about close by. The pipit was very close all the time, searching among the bushes and apparently feeding the cuckoo. The orange-red gape would show and the bills appeared to go together. Nearby was a second cuckoo of browner aspect, also followed by a smaller bird (Pipit).

In his book, "Coming Down the Wye", Robert Gibbings writes on the same subject. "Unfortunately, from where I say, I could not see what actually happened on the ground, but from the almost momentary disappearance of the cuckoo, and the obvious delight of the pipit, I had little doubt that the small bird was finding worms and offering them to the other."

I wonder if anyone else can recall similar experiences.

C.P. Rawcliffe

1. RED ADMIRAL - VANESSA ATALANTA and PEACOCK-NYMPHALIS

From the beginning of September to the end of the first week in October RED ADMIRAL butterflies were frequently seen in a garden at HUMBIE with, on 15 September, a maximum count of 4 on SIBERIAN wallflower, and in a garden near MAYFIELD, DALKEITH, with, on 16 September a maximum count of 20 and 1 PEACOCK butterfly on a BUDDLEIA bush.

On 15 September 1 RED ADMIRAL was also seen on MICHAELMAS DAISIES in ESKBANK.

G. Montgomery
E. Hamilton

2. SWALLOWS

20 October several seen above dunes at GULLANE
20 October 4 seen at SILVERKNOWES
21 October 2 seen over DALKEITH.

RICCARTON ESTATE, MIDLOTHIAN

The Riccarton estate lies between the A70 and the A71 and to the west of the minor road joining Hermiston and Currie. In 1966 the Midlothian County Council gifted it to the newly-created Heriot-Watt University as a site for their new campus. It consists of round about 250 acres of garden, woodland, fields and plantations, and includes part of the Murray Burn. This in turn is fed by a small tributary that flows through a small loch. Some of the timber consists of particularly fine specimens of wellingtonia, ash, sycamore, beech, elm and araucaria.

In 1970 Mrs Elspeth Hamilton was invited to study the birdlife within the estate, whilst Mrs Elisabeth Farquharson undertook the larger mammals. After two seasons Mrs Hamilton asked me to take over - this I did co-opting the assistance of Mrs Isobel MacLean. At the end of our first year I submitted a report to Professor Weddle, the Landscape Consultant, and this was later incorporated, along with reports from Mrs Hamilton and Mrs Farquharson, in Report No. 11 describing part of the Heriot-Watt University Development Plan. On the estate much building has taken place, roads have been made, playing fields laid out, some demolition has been done and the loch has been drained, cleaned and stocked.

Visits have continued during 1973 with special attention being paid during the year to the loch and the Pinetum. Records have been kept throughout the two years of observations and it is hoped that by this monitoring process account can be taken of such changes that may take place. There are bound to be some following the setting up of the University and the introduction of resident students. On taking over in 1972 Mrs Hamilton furnished me with a list of 52 species of birds seen in the course of 12 visits. These were subdivided into:

confirmed breeding	30
probable breeding	16
possible breeding	1
vagrant	5

During the next year Mrs MacLean and I, in 14 visits, raised the total to 67 positives plus 2 more in square brackets, namely peregrine and merlin. So far, in 1973 we have made 23 visits and the tally of identified species recorded now stands at 70. Many species, both breeding and non-breeding remain indifferent to the encroachment of mankind, but 2 breeding species appear to have gone, namely chiffchaff and whitethroat. One wonders if they will ever return. Activity adjacent to the loch did not prevent breeding by moorhen and coot in 1972 and 1973, nor the incoming, followed by breeding successes, of the little grebe in 1973.

Only brief attention has been paid to other branches of Natural History, but among flowers we have seen evening primrose, three-flowered leek, kidney saxifrage, bridewort and Welsh poppy. Though no special efforts were made to identify Fungi one needed no skill to identify superb specimens of oyster fungis and giant puffball. Roe deer and badger have been seen, in addition to hare, rabbit, grey squirrel and weasel, but though the fox occurs it has so far eluded us. In the loch there are perch, trout and three-spined sticklebacks. The writing of this article is not intended as an invitation to unauthorised persons to visit Riccarton Estate but rather to illustrate what can be achieved by consistent watching on a chosen area of ground.

C.P. Rawcliffe & Isobel MacLean

RICCARTON CHECK LIST OF BIRDS

little grebe	tachybaptus ruficollis
fulmar	fulmarus glacialis
grey heron	ardea cinerea
mallard	anas platyrhynchos
tufted duck	aythya fuligala
sparrowhawk	accipiter nisus
kestrel	falco tinnunculus
partridge	perdix perdix
pheasant	phasianus colchicus
moorhen	gallinula chloropus
coot	fulica atra
oystercatcher	haemotopus ostralegus
lapwing	vanellus vanellus
snipe	gallinage gallinago
woodcock	acclopax rusticola
common sandpiper	tringa hypoleucos
great black-backed gull	larus marinus
lesser black-backed gull	larus fuscus
herring gull	larus argentatus
common gull	larus canus
black-headed gull	larus ridibundus
stock dove	columba oenas
woodpigeon	columba palumbas
turtle dove	streptopelia turtur
tawny owl	strix aluco
swift	apus apus
skylark	alauda arvensis
swallow	hirundo rustica
house martin	delichon urbica
carrion crow	corvus corone
rook	corvus frugilegus
jackdaw	corvus monedula
magpie	pica pica
great tit	parus major
blue tit	parus caerulus
coal tit	parus ater
long-tailed tit	aegithalos caudatus
treecreeper	certhia familiaris
wren	troglodytes troglodytes
dipper	cinclus cinclus
mistle thrush	turdus viscivorus
fieldfare	turdus pilaris
song thrush	turdus philomelus
redwing	turdus iliacus
blackbird	turdus merula
wheatear	oenanthe oenanthe

robin	erithacus rubecula
sedge warbler	acrocephalus schoenobaenus
blackcap	sylvia atricapilla
garden warbler	sylvia borin
whitethroat	sylvia communis
willow warbler	phylloscopus trochilus
chiffchaff	phylloscopus collybita
goldcrest	regulus regulus
spotted flycatcher	muscicapa striata
dunnock	prunella modularis
pied wagtail	motacilla alba
grey wagtail	motacilla cinerea
starling	sturnus vulgaris
greenfinch	carduelis chloris
goldfinch	carduelis carduelis
linnet	acanthis cannabina
redpoll	acanthis flammea
bullfinch	pyrrhula pyrrhula
chaffinch	fringilla coelebs
corn bunting	emberiza calandra
yellow bunting	emberiza citrinella
reed bunting	emberiza schoeniclus
house sparrow	passer domesticus
tree sparrow	passer montanus

References:

A Species List of British and Irish Birds B.T.O. Guide 13

Heriot-Watt University Development Plan; Landscape Consultant's Report No. 11

EDINBURGH NATURAL HISTORY SOCIETY

CODE OF CONDUCT

1. The collecting of Specimens, unless for a special purpose should not be encouraged.

2. Any living Specimens taken for study should be returned to their original habitat as quickly as possible.

3. It should be remembered that the presence of people in one spot for a prolonged time will prevent animals or birds with young in the area from attending to them.

4. While a photograph is preferable to an actual speciman, damage can be caused by tidying the surroundings. Always replace any vegetation after taking the photograph.

SEPTEMBER 1973

NOTES FOR CONTRIBUTORS TO THE NEWS-LETTER

1. Contributions should, if possible, be typed using double spacing and leaving a margin of two inches on the left hand side of the page.

2. One side only of the page to be used for typescript and manuscript.

3. In manuscript all proper names, place names, popular names and scientific names of flora, fauna and unusual inanimate objects must be recorded in block capitals.

4. Where references are recorded within a formal paper they should be quoted, with the date of publication, at the end of the paper.

5. The author's name should be recorded under the title in a formal paper and signed at its conclusion.

6. In the case of the field note, the author's name should be recorded at the end of the note and the signature added.

7. Contributions should be submitted to the editor before November 30th in any year.

8. All contributions are recorded permanently in the Society's care so that they may be available for future reference.

9. Contributions are particularly welcome from junior members.

COUNCIL MEMBERS

	Appointed
Miss D. Howarth	1971
Mr. H. Hughes	1972
Mr. A.J. Smith	1973
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